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Distinguished Scientist Lecture Series Program 1983-1984

Bard College

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*The
Distinguished
Scientist
Lecture Series*



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*The
1983-84
Distinguished
Scientist
Lecture Series*



The Bard College Center
Annandale-on-Hudson
New York 12504

Schedule of Lectures

October 15, 1983
Chen Ning Yang
"Albert Einstein and Contemporary Physics"

November 5, 1983
Gerhard Herzberg
"Spectroscopic Studies of Simple Free Radicals"

December 3, 1983
Frederick C. Robbins
"The Impact of Science on Medicine
and Health"

February 28, 1984
Arno A. Penzias
"Our Changing View of the Universe"

March 13, 1984
Christian B. Anfinsen
"The Formation of Three-Dimensional
Structures of Proteins"

April 14, 1984
Charles L. Fefferman
"Twentieth Century Geometry"

May 5, 1984
David Botstein
"Mapping the Human Genome with
DNA Polymorphisms"

Baruch S. Blumberg
"Biology of Hepatitis B Virus"
Date to be announced

The Series

The origin of the Distinguished Scientist Lecture Series goes back to the fall of 1979 when Nobel laureate physicist Paul Dirac accepted an invitation from The Bard College Center to deliver a lecture on "The Discovery of Anti-Matter."

His talk combined scientific analysis with scientific history and personal reminiscence to present a view of modern science rarely seen by the general public—science as a record of personal achievement as well as a body of facts and knowledge. Professor Dirac's lecture drew an audience from throughout the East Coast, and its success inspired the establishment of The Bard College Center Distinguished Scientist Lecture Series. The first two years of the Distinguished Scientist Lecture Series were supported by the Pre-College Teacher Development in Science Program of the National Science Foundation.

The 1983-84 series comprises eight lectures by some of the most eminent scientists of our time, including six Nobel laureates. In addition to the lecture, each program includes a seminar for science scholars and others to further explore the life's work of the day's speaker.

For all those interested in the field of science—students, teachers, researchers, professionals in scientific industries, and lay people—the series provides a rare opportunity for first-hand contact with men and women who have shaped modern science—the chance to see how they think and work, how they view their own achievements, and how they assess the challenges that scientists face, now and in the future.

The Bard College Center

Established in 1978 as the "public arm" of the College, the Bard Center was recently described by the Rockefeller Foundation's Report of the Commission on the Humanities as "a model of mobilizing the resources of the college and the community." Through workshops, national conferences, small group seminars, lecture series, summer institutes, publications, and exhibitions at the Edith C. Blum Art Institute, the Bard Center explores the emerging issues of today in the sciences, arts, humanities, and education—to the benefit of the Bard community, the Hudson Valley region, and educators and policymakers around the country. The Center's varied efforts are complemented by the work of Bard Center Fellows who are distinguished artists, scientists, scholars, and writers appointed annually to serve as a "public faculty."

Bard College

Bard College is a coeducational college of the liberal arts and sciences, founded in 1860. It is located on a 600-acre wooded campus that borders the Hudson River in rural Dutchess County, New York, approximately 100 miles north of New York City.

The College is organized into four academic divisions: Social Studies; Languages and Literature; the Arts; and Natural Sciences and Mathematics; and also offers a Master of Fine Arts degree in the Milton Avery Graduate School of the Arts. Academic facilities include the Hoffman Memorial and Kellogg Libraries and the Milton and Sally Avery Center for the Arts.

In 1979, Bard assumed control and ownership of Simon's Rock, an "early college" which offers a college education in fully-accredited degree programs to high school age students. Simon's Rock is located in Great Barrington, Massachusetts, 50 miles from the Bard campus in Annandale-on-Hudson, New York. This step gave Bard an exceptional opportunity to apply its experience as a 123-year-old liberal arts college to the development of a strong liberal arts curriculum for younger students. Both Bard and Simon's Rock remain distinct and carry on quite separate academic programs at their respective campuses.

Chen Ning Yang, Physicist

Dr. Yang, a Nobel laureate, is Albert Einstein Professor of Physics and the Director of the Institute of Theoretical Physics at the State University of New York at Stony Brook. Born in Hofei, Anwhei, China, Dr. Yang earned the Ph.D. degree in 1948 at the University of Chicago.

In 1957, at the age of 35, he was named co-recipient of the Nobel Prize in Physics with Dr. Tsung-Dao Lee.

Before joining SUNY-Stony Brook, Dr. Yang was Professor at the Institute for Advanced Study in Princeton, New Jersey, from 1955 to 1966. He joined the Institute in 1949. He has been a Gibbs lecturer of the American Mathematical Society, Loeb lecturer at Harvard University, Vanuxem lecturer at Princeton University, Lincoln lecturer of the Board of Foreign Scholars (Fulbright Board) of the State Department, Pauli lecturer at the ETH, Zurich, Courant lecturer at New York University, Fermi lecturer at Scuola Normale Superiore, Pisa, and J.R. Oppenheimer Memorial lecturer, Los Alamos. He is Honorary Professor of Fudan University, Shanghai.

In addition to the Nobel Prize, his honors include the 1980 Rumford Prize and the 1957 Albert Einstein Commemorative Award.

Dr. Yang is a member of numerous academies and societies including the National Academy of Sciences, the American Physical Society, Sigma Xi, the Brazilian Academy of Sciences, and the Royal Spanish Academy of Sciences. He is also a member of the Governing Council of the Courant Institute of Mathematical Science.

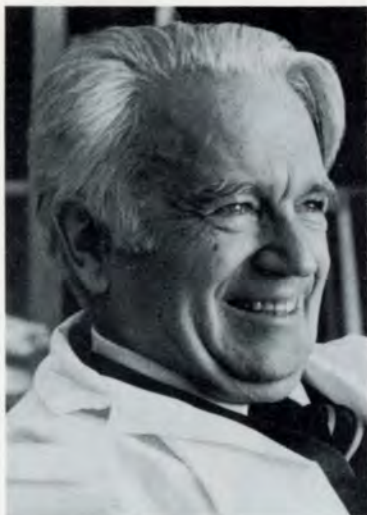
His Work

Dr. Yang and Dr. Lee shared the Nobel Prize in 1957 for their discoveries that challenged the principle of "Conservation of Parity," on which much of modern physics had been based. The principle says that objects which are mirror images of each other must obey the same physical rules. They theorized that in key cases parity need not be observed and a series of subsequent experiments proved them right.

His Lecture

October 15, 1983: "Albert Einstein and Contemporary Physics"





Gerhard Herzberg, Physicist and Chemist

Dr. Herzberg, a Nobel laureate, is Distinguished Research Scientist of the National Research Council of Canada. Born in Hamburg, Germany, he received his early training there and subsequently studied physics at the Darmstadt Institute of Technology where he earned his doctorate in 1928. From 1928 to 1930 he carried out postdoctorate work at the Universities of Göttingen and Bristol.

In 1971, Dr. Herzberg was awarded the Nobel Prize in Chemistry for his work on the structure of molecules.

Dr. Herzberg was Research Professor of Physics at the University of Saskatchewan from 1935 to 1945. For the next three years he served as Professor of Spectroscopy at the Yerkes Observatory of the University of Chicago. He returned to Canada in 1948 and in the following year was appointed Director of the Division of Physics at the National Research Council and later Director of the Division of Pure Physics, a position he held until his appointment as Distinguished Research Scientist in 1969.

A Fellow of the Royal Society of Canada and of the Royal Society of London, Dr. Herzberg was Bakerian lecturer of the Royal Society of London in 1960. He received a Royal Medal from that society in 1971.

He is an honorary member or fellow of many scientific societies and holds honorary degrees from a number of universities in Canada and abroad. Dr. Herzberg is author of several books on molecular and atomic spectroscopy.

His Work

Dr. Herzberg has made many contributions to atomic and molecular spectroscopy; in particular he and his associates have determined the structures in a large number of diatomic and polyatomic molecules, including the structures of many free radicals difficult to determine in any other way. He has also applied these spectroscopic studies to the identification of certain molecules in planetary atmospheres, in comets, and in interstellar space.

His Lecture

November 5, 1983: "Spectroscopic Studies of Simple Free Radicals"

Frederick C. Robbins, Physician

Dr. Robbins, a Nobel laureate, is President of the Institute of Medicine of the National Academy of Sciences and Dean Emeritus of the Case Western Reserve University School of Medicine. Born in Auburn, Alabama, Dr. Robbins received the M.D. degree from Harvard University School of Medicine in 1940.

Dr. Robbins received the Nobel Prize in Medicine and Physiology in 1954, jointly with Dr. John F. Enders and Dr. Thomas H. Weller, for their work in the cultivation of poliomyelitis virus in tissue culture and the application of this technique.

Dr. Robbins served as Dean of the Case Western Reserve University from 1966 to 1980. He was Professor of Pediatrics and Community Health at the University and was appointed University Professor and Dean Emeritus in 1980. In 1981 he was named Distinguished Professor in the Department of Pediatrics at Georgetown University. Dr. Robbins served as Director of the Department of Pediatrics and Contagious Diseases at Cleveland Metropolitan General Hospital from 1952 to 1966, and before that, worked in the research divisions for infectious diseases at Harvard Medical School and at Children's Hospital in Boston.

Dr. Robbins received the first Mead Johnson Award, with Dr. Weller, in 1953. He also received, with Dr. Enders and Dr. Weller, the Kimble Methodology Research Award in 1954. He was honored with the Modern Medicine Award for Distinguished Achievement in 1963 and the Medical Mutual Honor Award in 1969. He is a member of the American Academy of Arts and Sciences, the American Pediatric Society, and the National Academy of Sciences, among numerous others.

His Work

Dr. Robbins is well known for his Nobel Prize-winning work with Dr. Enders and Dr. Weller. Their discovery of the ability of the polio virus to grow in cultures of different tissues, was an accomplishment which served as a steppingstone for Dr. Jonas E. Salk who developed the actual polio vaccine. Dr. Robbins has made many contributions through pediatric research and through the study of viral diseases.

His Lecture

December 3, 1983: "The Impact of Science on Medicine and Health"





Arno A. Penzias, Astrophysicist

Dr. Penzias, a Nobel laureate, is Vice President of Bell Laboratories Research. Born in Munich, Germany, Dr. Penzias earned his doctorate degree in 1962 at Columbia University.

Dr. Penzias is best known for his part in the discovery of evidence supporting the "big-bang" theory of the origin of the universe, work for which he shared the 1978 Nobel Prize in Physics.

Dr. Penzias joined Bell Laboratories in 1961 as a Member of the Technical Staff. Over the years, he has held a number of managerial positions in Bell Laboratories Research and was named Vice President in 1981. Dr. Penzias maintains close ties with the academic community, having been a member of Princeton University's Astrophysical Sciences Department since 1967, where he regularly acts as thesis adviser to graduate students. He is also an Adjunct Professor of Earth and Space Science at the State University of New York at Stony Brook, as well as a member of the Board of Overseers of the School of Engineering and Applied Science, University of Pennsylvania.

He is a member of the National Academy of Sciences, as well as a number of other scientific and professional organizations. He also serves as Chairman of the Editorial Committee of the *Bell System Technical Journal*, and as Vice Chairman of the Committee of Concerned Scientists, a national organization devoted to working for the political freedom of scientists in various countries. Dr. Penzias has received a number of honorary degrees and is the only American to hold an honorary doctorate from the Paris Observatory.

His Work

Dr. Penzias took part in the pioneering Echo and Telstar communications satellite experiments early in his career at Bell Laboratories. His present responsibility covers a wide range of programs in the physical, material, communications and information sciences there. Dr. Penzias also maintains an active program of personal research. His recent work includes the study of chemical molecules in outer space, with particular emphasis on how the elements in these molecules are formed, as well as studies of the structure of our galaxy, the Milky Way.

His Lecture

February 28, 1984: "Our Changing View of the Universe"

Christian B. Anfinsen, Biological Chemist

Dr. Anfinsen, a Nobel laureate, is Professor of Biology at Johns Hopkins University. Born in Monessen, Pennsylvania, Dr. Anfinsen received the Ph.D. degree in 1943 from Harvard University Medical School.

In 1972 he shared the Nobel Prize in Chemistry with Stanford Moore and William H. Stein for their studies of the enzyme ribonuclease.

Dr. Anfinsen was Visiting Professor of Biochemistry at the Weizmann Institute of Science in Rehovet, Israel from 1981 to 1982. He served as Chief of the Laboratory of Chemical Biology of the National Institute of Arthritis, Metabolism, and Digestive Diseases from 1963 to 1981. He has taught at Harvard Medical School, served as Chief of the Laboratory of Cellular Physiology and Metabolism of the National Heart Institute, and was Visiting Fellow at All Souls College, Oxford in 1970. He has been a Naff lecturer at the University of Kentucky, Kempner lecturer at the University of Texas Medical Branch-Galveston, Mathers lecturer at Indiana University-Bloomington, Jubilee lecturer of the British Biochemical Society, Leon lecturer at the University of Pennsylvania, and Kelly lecturer at Purdue University.

He received the 1954 Rockefeller Foundation Public Service Award, a Guggenheim Fellowship in 1958, and a National Science Foundation Travel Award in 1959. Dr. Anfinsen is a member of the American Society of Biological Chemists, the National Academy of Sciences, the Royal Danish Academy, the American Philosophical Society, and the Pontifical Academy of Science.

His Work

Dr. Anfinsen's research interests have included the study of non-uniform labelling in newly-synthesized proteins, study of the relationship between structure and function in enzymes, investigations of an extracellular nuclease of *Staphylococcus aureus*, and study of the isolation and chemical characterization of human interferon. Most recently he has been involved with the study of certain extreme thermophilic bacteria found in vents along the tectonic plates in the Pacific Ocean floor.

His Lecture

March 13, 1984: "The Formation of Three-Dimensional Structures of Proteins"





Charles L. Fefferman, Mathematician

Dr. Fefferman is Professor of Mathematics at Princeton University. Born in Washington, D.C., Dr. Fefferman earned the Ph.D. degree in 1969 at Princeton University.

At the age of 22, he was named professor at the University of Chicago and became the youngest full professor at any United States university. In 1974, when he was named professor at Princeton, he was the youngest full professor in the history of that institution.

A member of the American Academy of Arts and Sciences and of the National Academy of Sciences, Dr. Fefferman has held visiting positions at the University of Paris, the Weizmann Institute (Israel), the Institut Mittag-Leffler (Sweden), and New York University. He has lectured at several universities, including the University of California at Berkeley, Harvard University, Columbia University, Cornell University, and Indiana University.

While doing graduate work at Princeton, he was awarded a Woodrow Wilson Fellowship and National Science Foundation and Princeton National fellowships. He received the Alfred P. Sloan Foundation Fellowship in 1970 and a NATO postdoctoral fellowship in 1971. He was awarded the Salem Prize that year by the French government. In 1976, Dr. Fefferman was the first recipient of the National Science Foundation's Alan T. Waterman Award, a prestigious prize authorized by Congress. In 1978, he received a Fields Medal from the International Congress of Mathematicians. He also holds several honorary doctorates.

His Work

Dr. Fefferman's research has focused on mathematical subjects in the areas of Fourier analysis, partial differential equations, and several complex variables. His work in these areas has brought clarity to topics previously considered by many too difficult to be understood at this stage in the development of mathematics.

His Lecture

April 14, 1984: "Twentieth Century Geometry"

David Botstein, Biologist

Dr. Botstein is Professor of Biology at Massachusetts Institute of Technology. Born in Zurich, he received the Ph.D. degree in human genetics with a subspecialty in microbial genetics from the University of Michigan.

He has been the recipient of a Woodrow Wilson National Fellowship, an NIH Career Development Award, and the Eli Lilly & Company Award in Microbiology and Immunology. He was elected to the National Academy of Sciences in 1981. Dr. Botstein serves on the editorial boards of *Journal of Virology*, and *Genetics*, and the advisory committee of the ACS Study Section on Virology and Cell Biology. He has also been a member of the advisory committee of the National Science Foundation Study Section on Genetics and Biology. The author of *Advanced Bacterial Genetics: A Manual for Genetic Engineering* (1980), Dr. Botstein has contributed to many professional journals, including the *Proceedings of the National Academy of Science, USA, Cell, and Gene*.

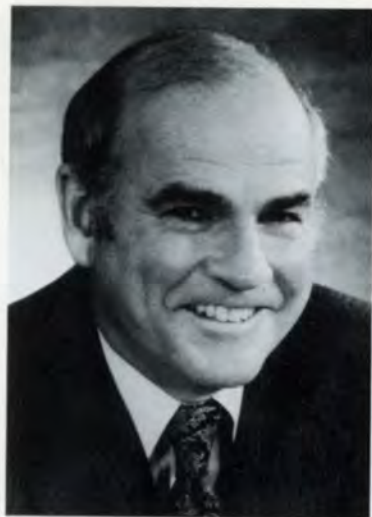
His Work

Dr. Botstein's research has concerned itself with the molecular biology of the life cycle of the temperate *Salmonella* phage P22, and with several aspects of the molecular genetics of yeast.

His Lecture

May 5, 1984: "Mapping the Human Genome DNA Polymorphisms"





Baruch S. Blumberg, Research Physician

Dr. Blumberg, a Nobel laureate, is Eastman Visiting Professor at Balliol College, Oxford University, and Associate Director for Clinical Research and Senior Member of The Institute for Cancer Research in Philadelphia. Born in New York City, Dr. Blumberg earned the M.D. degree at Columbia University in 1951 and the Ph.D. degree at Oxford University in 1957.

Dr. Blumberg was awarded the Nobel Prize in Medicine and Physiology in 1976 for his discovery concerning new mechanisms for the origin and dissemination of infectious diseases.

Dr. Blumberg has been University Professor of Medicine and Anthropology at the University of Pennsylvania since 1977. He is staff member at Jeanes Hospital and American Oncologic Hospital in Philadelphia, and is attending physician at Veterans Administration Hospital, Pennsylvania Hospital, and the Hospital of the University of Pennsylvania.

He has been a Visiting Fellow at Trinity College, Oxford, a Fellow of the Arthritis and Rheumatism Foundation, and a Fellow of the Department of Medicine, College of Physicians and Surgeons. He was Chief of the Geographic Medicine and Genetics Section, and attending physician at the Clinical Center of the National Institutes of Health from 1957 to 1964. He is a member of the Editorial Board of *Medical Biology*, and a member of the Advisory Board, Encyclopedia of the Life Sciences, the Nature Press.

In addition to the Nobel Prize, Dr. Blumberg has received many awards including the Pennsylvania Medical Society Distinguished Service Award in 1982, the Richard and Hinda Rosenthal Foundation Award of the American College of Physicians in 1977, the Gairdner Foundation International Annual Award and the Modern Medicine Distinguished Achievement Award in 1975. He has received a number of honorary degrees and holds membership in numerous professional organizations and medical societies.

His Work

Dr. Blumberg was awarded the Nobel Prize for his discovery of the Australia antigen, an antigenic substance in the blood. His discovery of the Australia antigen ultimately became a major breakthrough in hepatitis research. Dr. Blumberg's work leading to this discovery began as a consequence of his interest in inherited polymorphisms of blood.

His Lecture

Date to be announced: "Biology of Hepatitis B Virus"

Advisor for the Series

Dr. Abe Gelbart, a mathematician, is a Bard College Center Fellow, Dean Emeritus of the Belfer Graduate School of Science at Yeshiva University, and the David and Rosalie Rose Distinguished Professor in Natural Sciences and Mathematics at Bard College. A former member of the Institute for Advanced Study in Princeton, New Jersey, Dr. Gelbart was a Fulbright Lecturer in Norway in 1951. He was associated with journal, *Scripta Mathematica*, first as an Associate Editor and then, for 14 years, as Editor. Dr. Gelbart is the co-developer of the theory of pseudoanalytic functions, the mathematical foundation for modern fluid dynamics. He has lectured at many American and European universities, and was Lecturer at the Institute for Fluid Dynamics, Paris, France. He is currently writing a history of twentieth century Science.

Project Director

Dr. Michael Rosenthal, a chemist and environmental scientist, is Associate Dean of Academic Affairs, Chairman of the Division of Natural Sciences and Mathematics, and Professor of Chemistry at Bard College. He has been active in environmental planning and management in the Hudson River Valley and serves as chairman of the Heritage Task Force, a commission which advises the New York State Department of Environmental Conservation on issues concerning the environment and historical preservation.





Previous Participants in the Distinguished Scientist Lecture Series

Philip W. Anderson, Physicist

December 4, 1982

"Seeing the World Through Spin Glasses"

Dr. Anderson shared the 1977 Nobel Prize in Physics with Sir Nevill Mott and John H. Van Vleck, for their theoretical investigations of the electronic structure of magnetic and disordered systems. He is the Joseph Henry Professor at Princeton, and the Director of Physics Principles Research at Bell Laboratories. Among his numerous awards are the Guthrie Medal and Prize, and the Golden Plate Award of the American Academy of Achievement.



Paul Berg, Biochemist

May 22, 1982

"Gene Isolation and Manipulation: A New Window on Our Heredity"

Dr. Berg won the 1980 Nobel Prize in Chemistry for his studies of the biochemistry of nucleic acids, particularly recombinant DNA. The Willson Professor of Biochemistry at Stanford University Medical Center, he has received the Gairdner Foundation and the New York Academy of Sciences Awards, and the Albert Lasker Medical Award. Dr. Berg and his colleagues have been active in experiments designed to explore the chemistry and biology of mammalian and human chromosomes.



Konrad E. Bloch, Biochemist

November 6, 1982

"On the Evolution of Small Molecules"

Dr. Bloch shared the 1964 Nobel Prize in Medicine and Physiology with Fedor Lynen, for their contributions to our knowledge of the complex pattern of reactions involved in the biosynthesis of cholesterol and of fatty acids. He is the Higgins Professor of Biochemistry at Harvard University. Among his many awards is the Fritzsche Award of the American Chemical Society.

Paul Dirac, Theoretical Physicist

May 15, 1982

"From Einstein to Anti-Matter"

One of the great mathematical physicists of the twentieth century, Professor Dirac is one of a select few, including Albert Einstein, Erwin Schrödinger, and Enrico Fermi, whose theories have transformed our understanding of the physical universe. His pioneer work in the quantum mechanics of the atom won him the Nobel Prize in Physics along with Schrödinger in 1933 at the age of 31. He has also received the Royal Medal of the Royal Society, the Copely Medal of the Royal Society, the Queen of England's Order of Merit, and is a member of the Papal Academy. Dr. Dirac is Professor Emeritus and a Fellow of St. John's College, Cambridge, England, and is Professor of Physics at Florida State University.



Carl Djerassi, Chemist

May 23, 1981

"The Politics of Contraception"

Dr. Djerassi is Professor of Chemistry at Stanford University, a Bard College Center Fellow, and President of Zoecon Corporation, which manufactures and markets pet care and agricultural products. Among his awards are the American Chemical Society Award in Pure Chemistry, the Baekeland Medal, the Chemical Pioneer Award of the American Institute of Chemists, and the Perkin Medal, awarded by the Society of Chemical Industry. An authority on fertility control in humans as well as insects, he played a major role in the development of the first oral contraceptive.



Paul J. Flory, Chemist

February 13, 1982

"Spatial Configurations of Macromolecules"

A leader in the field of polymer behavior, Dr. Flory was the sole recipient of the 1974 Nobel Prize in Chemistry. The J.G. Jackson-C.J. Wood Professor of Chemistry at Stanford University, Dr. Flory has received the American Physical Society's High Polymer Physics Prize, the American Chemical Society's Priestley Medal, and the National Medal of Science. Dr. Flory has been a teacher in research on the chemistry and physics of giant molecules, or polymers, which make up such materials as natural and synthetic rubber, fibers, and plastics. He first entered this field as a member of the research team under Dr. Wallace H. Carothers of DuPont, whose original investigations led to the discovery of nylon.





Dudley R. Herschbach, Chemist

April 9, 1983
"Single Collision Chemistry"

Dr. Herschbach is the Frank B. Baird Jr. Professor of Science at Harvard University. The major theme of his research has been the molecular dynamics of chemical reactions. He has received the Pure Chemistry Prize of the American Chemical Society, the Linus Pauling Medal, and the Michael Polanyi Medal, among others.

Roald Hoffmann, Chemist

April 16, 1983
"What Chemists Really Do—The Logical Structure of Modern Chemistry"

Dr. Hoffmann shared the 1981 Nobel Prize in Chemistry with Kenichi Fukui. The John A. Newman Professor of Physical Science at Cornell University, he is the only person ever to have received the American Chemical Society's Award in Pure Chemistry in two different subfields of chemistry—the A.C. Cope Award in Organic Chemistry in 1973 and the Award in Inorganic Chemistry in 1982.

Mark Kac, Mathematician

October 18, 1980
"Chance and Regularity"

Dr. Kac is Professor of Mathematics and Theoretical Physics at The Rockefeller University. He has twice won the Chauvenet Prize of the Mathematical Association of America, and is the recipient of the 1976 Alfred Jurzykowski Foundation Award in Science and of the 1978 Birkhoff Prize. Dr. Kac is an authority on probability theory, particularly its use in mathematical analysis and statistical physics.

Arthur Kornberg, Biologist

February 21, 1981
"DNA Replication"

Dr. Kornberg won the 1959 Nobel Prize in Medicine and Physiology, with Dr. Severo Ochoa. A professor at the Stanford University School of Medicine, Dr. Kornberg has received the Paul Lewis Award in Enzyme Chemistry, the Max Berg Award for Prolonging Human Life, the Scientific Achievement Award of the American Medical Association, and the National Medal of Science. His most notable achievements have grown out of his research into the structure and dynamics of DNA. In 1967, working with a team of biochemists at Stanford, he became the first to synthesize biologically active DNA outside a living cell.



Willis E. Lamb, Physicist

April 25, 1981
"Simple Problems in Physics"

Dr. Lamb was awarded the 1955 Nobel Prize in Physics with Dr. Polykarp Kusch for his discoveries regarding the structure of the hydrogen spectrum. A Professor of Physics and Optical Sciences at the University of Arizona, he was a Fulbright lecturer at the University of Grenoble. He has won the Rumford Premium of the American Academy of Arts and Sciences and the Guthrie Award from the Physical Society of London.

Joshua Lederberg, Geneticist

October 10, 1981
"Styles and Patterns in Biomedical Research"

At the age of 33, Dr. Lederberg was named a co-recipient of the Nobel Prize in Medicine and Physiology along with Dr. E.L. Tatum and Dr. George Beadle. The President of The Rockefeller University, Dr. Lederberg pioneered in the field of bacterial genetics. Prior to his discovery that bacterial strains could be crossed to produce an offspring containing a new combination of genetic factors, scientists had known little about the bacterial genetic mechanism and many even doubted that bacteria possessed a genetic mechanism similar to that of higher organisms.

Tsung-Dao Lee, Physicist

May 1, 1982
"Is Vacuum a Physical Medium?"

Among the youngest men ever to receive a Nobel Prize, Dr. Lee, at the age of 30, was named co-recipient of the 1957 Nobel Prize in Physics with Dr. C.N. Yang, for their discoveries that challenged the principle of "Conservation of Parity," on which much of modern physics had been based. They theorized that in key cases parity need not be observed and a series of subsequent experiments proved them right. The Enrico Fermi Professor of Physics at Columbia University, Dr. Lee has received the Albert Einstein Award in Science.





William N. Lipscomb, Jr., Chemist

March 19, 1983
"How Do Enzymes Work?"

Dr. Lipscomb won the 1976 Nobel Prize in Chemistry for his original research on the structure and bonding of boron hydrides and their derivatives. The Abbott and James Lawrence Professor at Harvard University, he has long been the dominant figure in the field of boron chemistry. His numerous other honors include the Alexander von Humboldt-Stiftung Senior Scientist Award and the Peter Debye Award in Physical Chemistry of the American Chemical Society.

Abraham Pais, Physicist

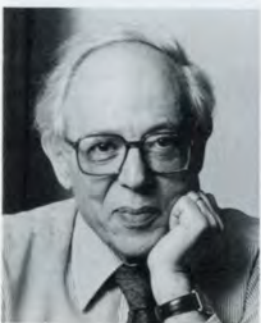
April 3, 1982
"Einstein, the Science and the Life"

Dr. Pais is Detlev W. Bronk Professor of The Rockefeller University. He has received the J. Robert Oppenheimer Memorial Prize. An eminent theoretical physicist and a founding father of particle physics, he and his colleagues have investigated fundamental particle processes at high energies, symmetries of strong and weak interactions, and quantum field theory. He has played a leading role in several developments which aim to provide an explanation for the behavior of the interactions in particle physics.

George C. Pimentel, Chemist

April 24, 1982
"From Chemical Lasers to the Atmosphere of Mars"

Dr. Pimentel is Director of the Laboratory of Chemical Biodynamics and Professor of Chemistry at the University of California at Berkeley. He has received the Alexander von Humboldt Senior Scientist Award, the E.K. Plyler Prize in Molecular Spectroscopy, the Ellis R. Lippincott Medal, and the Distinguished Service Gold Medal from the National Science Foundation. His pioneering development of rapid scan techniques for infrared spectroscopy led to the design of a unique infrared spectrometer for the 1969 Mariner interplanetary spacecraft to determine the composition of the atmosphere of Mars.



Ilya Prigogine, Chemist

November 13, 1982
"Probing Into Time"

In 1977, Dr. Prigogine won the Nobel Prize in Chemistry for his contributions to nonequilibrium thermodynamics, particularly the theory of dissipative structures. He has been Professor at the Free University in Brussels since 1947, and Director of the International Institutes of Physics and Chemistry in Solvay, Belgium since 1962. He has received numerous honors including the Rumford Gold Medal of the Royal Society of London in 1976 and the Descartes Medal of the University of Paris in 1979.

I.I. Rabi, Physicist

March 14, 1981
"Molecular Beams, Experimental Discovery, and Theoretical and Mathematical Insights"

Dr. Rabi received the 1944 Nobel Prize in Physics for developing the molecular beam resonance technique, a major tool in nuclear research. A Professor of Physics at Columbia University, he has served on the General Advisory Committee of the U.S. Atomic Energy Commission, has conducted research at the Brookhaven National Laboratories on the peacetime uses of atomic energy, and has been science advisor to the government under a succession of presidents. Among his many awards and honors is the Atoms for Peace Prize.

Edward Teller, Physicist

December 13, 1980
"The Persian Gulf—If It's Still There"

Dr. Teller is Director Emeritus of the Lawrence Livermore Radiation Laboratory and a Senior Research Fellow at the Hoover Institution on War, Revolution and Peace. He has received the Joseph Priestley Memorial Award, the Albert Einstein Award, and the Fermi Award. Dr. Teller is interested in the application of nuclear energy, particularly as part of a comprehensive energy plan for the United States.

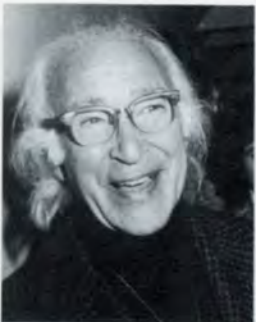




Samuel C.C. Ting, Physicist

October 16, 1982
"Search for the Fundamental Structure of the Universe"

In 1976, Dr. Ting was named co-recipient of the Nobel Prize in Physics with Dr. Burton Richter. Dr. Ting and Dr. Richter, working in separate groups, electrified the world of high energy physics in November of 1974 with the discovery of a new particle with remarkable properties. The implication of their experiments continue to stimulate reformulation of our basic understanding of matter.



George Wald, Biologist

March 28, 1981
"Life in the Universe"

Dr. Wald won the 1967 Nobel Prize in Physiology with Haldan K. Hartline and Ragner Granit. A Professor Emeritus at Harvard University, he has received the Albert Lasker Award of the American Public Health Association and the Rumford Premium of the American Academy of Arts and Sciences. Dr. Wald is an expert on the chemistry and physiology of the human eye. Most of what we know about the chemical process by which light is transmuted into sight has come directly or indirectly from his work.



Frank H. Westheimer, Chemist

March 20, 1982
"Photoaffinity Labeling: Marking the Receptors for Biological Molecules"

Dr. Westheimer is Morris Loeb Professor of Chemistry at Harvard University. He has received the James Flack Norris Award in Physical Organic Chemistry, the Willard Gibbs Medal, and the National Academy of Sciences Award in Chemical Science. Dr. Westheimer's career has included mechanisms of the hydrolysis and phosphate esters, photoaffinity labeling, and biochemical oxidation-reduction reactions.

Eugene Wigner, Physicist

November 1, 1980
"Problems of Quantum Mechanics Measurement Process"

Dr. Wigner won the 1963 Nobel Prize in Physics. He is best known for his pioneering work in nuclear structure. One of his most noted achievements was the application of the mathematical system of group theory to atomic and nuclear problems. From 1942 to 1945 he worked at the University of Chicago, where he participated with Enrico Fermi in the experiment that produced the world's first controlled nuclear reaction. He has received the Fermi Award, the Albert Einstein Award, and the National Medal of Science.

E. Bright Wilson, Chemist

May 9, 1981
"Recent Developments in Molecular Spectroscopy and Some of Their Implications"

Dr. Wilson is Professor Emeritus at Harvard. He has received the American Chemical Society Award, the Rumford Medal of the American Academy of Arts and Sciences, and the National Medal of Science. Since 1977, he has been the chairman of the Committee of Radioactive Waste Management of the National Academy of Science. Dr. Wilson is an authority on molecular spectroscopy, the analysis of polyatomic molecules. For the past several decades he has worked on the microwave spectroscopy of large molecules, and is continuing his studies of the internal and overall rotational motion of chemical species in gases.

Rosalyn Yalow, Medical Researcher

April 11, 1981
"Radioactivity in the Service of Man"

Dr. Yalow won the 1977 Nobel Prize in Medicine. She is Senior Medical Investigator for the Veterans Administration Medical Center and Chairman of the Department of Clinical Sciences at Montefiore Medical Center. She has received the Albert Lasker Basic Medical Research Award, the Rosalyn Yalow Research and Development Award of the American Diabetes Association, and the Gratum Genus Humanum Gold Medal of the World Federation of Nuclear Medicine and Biology. Dr. Yalow has been a pioneer in the use of radioimmunoassay (RIA) in medical research and diagnosis.



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